Remarks/Arguments

The Examiner has objected to the Abstract. An amendment to the Abstract which is believed to overcome the Examiner's objection is filed herein.

The Examiner has rejected claims 1-13 under 35 USC 112. Claims 1-8 and 10-13 have been amended and are believed to be definite in form. Claim 9 has been cancelled. Withdrawal of the Examiner's rejection is therefore respectfully requested.

The Examiner has rejected claims 1-9 and 11-13 as anticipated by Ziegler et al. (WO 03/060458). The Examiner's rejection is respectfully traversed. Ziegler discloses a device for determining the optical properties of a device under test in which modulators 201 and 202 (cited by the Examiner in his rejection) are employed to differentiate the signals transiting the DUT in opposite directions. "[T]he two fractions of the light propagating through the DUT in opposite directions are coded by two modulation units 201 and 202 providing a signal 80-f1 and a signal 80-f2. Then, the signals 80f1 and 80-f2 are detected by using a PDR 206 and a PDR 208 having a phase 20 sensitive detection scheme, i.e. by a frequency selective detection." See page 5 lines 15-20. This is entirely unlike the structure of the present invention as disclosed and claimed wherein a modulator is employed in the interferometer to create a frequency difference providing the ability to heterodyne a beat signal at the photodetector which is used to translate the optical characteristics of the DUT into the electrical domain. The present invention does not rely either on the continuously sweep of the tunable laser or on the length difference of the interferometer arms as in the prior art (see page 2 lines 20-23 and page 4 lines 6-10 of Ziegler). Instead, one of the interferometer arms is frequency- or phase-modulated. This modulation then creates the desired frequency difference. The invention of the present application as disclosed and claimed can therefore be used with either continuously swept tunable lasers or stepped tunable lasers and can be independent of the arm lengths in the interferometer. No modulator or similar component or construction is disclosed or suggested by Ziegler.

Specifically with respect to claim 5, Ziegler at page 3, line 22-23 requires the use of a polarization controller. The invention defined in the present application does not

require this component. Instead of using a polarization controller, the method described and claimed in claim 5 renders the inventive system independent of polarization.

Specifically with respect to claim 6, in Ziegler (page 5, lines 24 and 25), S11, S21 etc. are defined as expressions for "Stokes matrix elements". Stokes (or Muller) elements are real numbers. Stokes parameters are used to describe the transfer function taking into account the optical polarization between two ports only. Therefore, only two ports are considered.

In the present application, S-Parameters are defined as known in microwave engineering (Scattering Parameters) (see page 1 lines 9-28 of the present application). S-Parameters are a matrix of elements that defines the transfer functions among the multiple ports of multi-ports microwave devices. Those are then Microwave S-Parameters and are complex numbers. The invention in the present application creates "Optical S-Parameters" resembling the microwave s-parameters. However, they are not just one complex number as in microwaves. Each optical Sxy parameter is a matrix of optical elements, i.e., each optical Sxy then describes the transfer function between two specific ports of the optical device. Thus, each optical Sxy can be an entire Stokes Matrix or, more preferably, an entire Jones Matrix. A Jones matrix is 2x2 matrix, each element been a complex number. Thus, each optical Sxy is a 2x2 complex matrix. The number of optical Sxy elements depends on the number of input and output ports of the multiport DUT. If the DUT has 4 input ports and 7 output ports, then the optical Sxy matrix will be a 4x7 matrix, each element been a 2x2 complex sub-matrix. This element of the invention is specifically claimed in claim 6.

The applicant respectfully contends that claims 1-8 and 11-13 are not disclosed or suggested by Ziegler and are therefore allowable.

The Examiner has rejected claim 10 as obvious over Ziegler in view of Baney et al (2003/0174338). In view of the argument presented with respect to Ziegler above regarding claims 1 and 4 from which claim 10 depends, the applicant respectfully contends that Baney does not disclose or suggest the elements claimed for the present invention, with claim 10 taken as a whole incorporating all elements and limitations of the base and intervening claims, which are not present in Ziegler as relied upon by the Examiner. Baney also requires the use of swept tunable lasers as in Ziegler see for

example page 4, col. 4, line 56 “swept” or page5, col. 5, line 25 “rate of sweep” ..where the “rate of sweep” is a constant number as seen in the expressions. The additional elements and limitations of claim 10 therefore are drawn to a patentable combination and claim 10 is believed to be allowable over the art cited.

New claims 14-18 are provided for consideration by the Examiner.

The applicant respectfully contends that the claims as now amended are in condition for allowance and action by the Examiner in that regard is respectfully requested.

Respectfully submitted,

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